It must be premised, that the revival found the art under very different circumstances. The growth of liberty in the Middle Ages, magnifying the individual, whose house now became his castle, an aristocracy balancing the kingly authority, the increase of commerce, and many other causes, altered the whole face of domestic architecture; it might safely be asserted, that no palace of the solidity of the Strozzi or of Burlington House, ever existed in antiquity. The remains of the most insignificant temples and public buildings are still found, but the absence of any remains of such solid mansions as those throughout the ancient world might be adduced in proof that the domestic architecture of the ancients was slight and ephemeral. The houses of the ancients, like those of the Turks, were of wood and brick, covered with plaster and with paint. Columns, indeed, abounded, but they were moveables, or furniture, the objects of manufacture at the quarries, and of trade. These reflections were sufficient to shew that the features which the architects of the revival, in their endeavour to restore classical architecture, were new in execution and design, and required a stretch and effort of mind, which we do not sufficiently take into account. Those who may be considered the active restorers of architecture are,—Brunelleschi, Bramante, Alberti, Peruzzi, Serlio, San Gallo, Michael Angelo, Raphael, San Michael, Sansovino, Galleazzo, Alessi, Vignola, Palladio, Scamezzi, L'Escot, Philibert de l'Orme. Many others might be added, but none more remarkable than these. The question occurs, in what particulars were these men great? The answer will always be, that not only were they eminent practitioners, but they advanced their art, and contributed new views and inventions towards its perfection."

The close was devoted to a sketch of the principal works of the architects whose names had been enumerated, and was given in so succinct and useful a form that we shall avail ourselves of it in a future article, referring, at the same time, to some peculiarities of opinion in the discourse, which, on the present occasion, we have not space to enter upon.

WOOLRICH'S PATENT PROCESS OF MAGNETO-PLATING.—Among the discoveries in connection with the mechanical arts which have been made within the last four years, the most extensively valuable are undoubtedly those relating to the coating of one metal with another metal, as copper with gold, tin with silver, &c., by galvanic precipitation. They have already gone far to supersede entirely the older and more mechanical methods of gilding, silvering, and plating. Since Mr. Spencer first led the way, with so little pecuniary advantage to himself, he has been followed by a host of fellow-labourers, each striving to appropriate either the titular proprietorship or the more profitable usufruct of some portion of the new field of invention which he had *open* to their enterprise. Patents have been taken out for a great number of modes of precipitation, differing more or less from one another, but all coming under the now universally accepted denomination of electro-plating. Among the most prominent and successful of these patentees are the Messrs. Elkington, who have established manufactories in London and Birmingham, at which the most beautiful articles of manufacture, such as vases, candelabra, tea-urns, coffee-pots, dish-covers, &c., are plated with silver and gold by the galvanic agency. We have now the pleasure of being the first to bring under public notice an equally remarkable application of science to this branch of art which has been just made by Mr. J. S. Woolrich, of Birmingham. It consists in the accomplishment of the same purposes by means of *magnetism*. Every one is acquainted with the property which the magnet possesses of attracting steel needles and of communicating the magnetic property to iron and steel, but it will no doubt surprise most persons to see the same power employed in the art of plating metals. Referring the reader for a full explanation of the details of the process to the inventor's specification, we shall here content ourselves with pointing out some of the more prominent advantages which this process of *magneto-plating*, as it is appropriately termed, appears to possess over electro-plating. Being effected without the aid of galvanism, neither acids nor salts are employed, and there is no wear and tear of galvanic batteries. In fact, when the apparatus is complete, the cost of which is moderate, it will last for an almost unlimited period of time; for as there is no destruction in working it of any of its parts, except by friction, it must be long before any renewal of them can be required. The apparatus, too, may be relied on for working with the greatest certainty and regularity, in both which respects the galvanic battery is greatly deficient. The facility with which it may be managed is also remarkable, the same machine being capable of plating articles from the size of a pin's head to that of a candelabra.—*Mechanics' Magazine.*

A WALK THROUGH MR. BIELEFELD'S MANUFACTORY OF PAPIER MACHE.

WHAT a fertile theme of discussion and disputation does this suggest to minds disposed to analyse and to criticise, who enter into the investigation of every subject, neither blinded to its defects, nor wedded to it "for better and for worse." We frequently feel thankful that we have by education and other circumstances been so thrown into contact with men and things, as to be able to draw a line for ourselves between the partialities and prejudices of the mere partisan, to see good where he denies its existence, and detect the evil which he is in no disposition to recognise; this may and does subject us, 'tis true, to an occasional temporary alienation of friendly feeling, and puts us in the position of the impartial arbitrator, who incurs the dislike of both those whom his judgment is directed to serve. Time, however, removes his clients from the exciting and disturbing influences of mutual hostility, and they both agree then in paying that honourable tribute of approbation which the efforts of their friend who dared to be honest between them entitled him to. So we are resolved to hold an even balance, as far as possible, between parties and interests, and to trust to time to test the merit and the value of our impartiality.

It is in this spirit that we approach the question before us; neither the arguments of the plasterers nor the putty-composition ornament makers on the one hand, nor the revilers of what they call "*cheap imitations*" on the other, shall deter us from looking into what we think worthy of attention, or influence us to suffer the reproach of ignorance to attach to us, for fear of offending any party.

That this subject is worthy of attention, it is only necessary to put our heads within the doorway of Mr. Bielefeld's show-rooms and manufactory to be convinced. One glance will settle this point—and although the collection and display is, with so many articles, necessarily of a mixed and medley character, there is still enough in the way of arrangement to excite emotions of pleasure and delight as we steadily turn from one series of enrichment to another, and contemplate these lively representations of the beautiful details of ancient architectural ornament. If it were only of value as a book, so to speak, in which the all but perfect reality of far-distant and widely-scattered embellishments were vividly portrayed—more vividly of necessity than the best pencillings, and still more so than the best descriptions of the pen—it would be deserving of our commendation; but when we consider the influence it must have on the promotion of a national taste; that, carried to every man's door as these copies of the best exemplars are being continually, and only requiring to accompany them the interpreting voice of counsel and instruction, to make them the best agents in the schooling of our artizans as to principles of design; we say, when it is considered in this light, we are sure it will come to be regarded as we regard it, as one of the most important institutions which private enterprise has set up in aid of that branch of ornamental art to which it refers.

The facilities which this manufacture presents for indulging in the taste for ornament, at a time too when this taste is confessedly at almost its lowest point, is to be regarded in every light as an advantage. The taste once formed, it expands its means of gratification, and, by degrees, turns to the realization of beauties similar to, or suggested by, the cheaper fabric, in more costly and durable ones. The wooden hut led to the marble temple, the chaplets of natural leaves and flowers, to those in silver and gold. Art steps forward in this way, in simplicities, and ascends through these to greatness and dignity.

We would carry a knowledge of this manufacture into every country builder's house and workshop, and we propose to ourselves to do as much as we have time and space for in directing him in the application of it to various uses. Little experiments in decoration may be easily instituted in the parlour of his own cottage, and from that he may essay to bolder attempts in the superior village house, the parsonage, or "the hall." Cornices that he would never think of setting about in plaster, may be added, that is a frieze upon deal, and painted, and a soffit, both with most elegant ornaments; a light bed or cornice moulds, or broader enrichments, may be placed in the angles; the doors and door-case mouldings may be of the enriched character "planted" in. Picture frames in permanent panellings, after the manner of the old wainscotting, or otherwise, may be indulged in at an insignificant cost; in these points, however, and numerous others, we shall take an early opportunity of giving drawings and examples. We have an ample store to draw from in this manufactory and the published book of Mr. Bielefeld's, and we are sure we shall render considerable service to our country friends by rendering them more familiar with both.

(To be continued.)

NEW CEMENTS.

I HAVE for many years past been induced to experiment on the best mode of making cement, to join wood, glass, china, &c. Amongst other works, I had to "glue" the parts of my artificial shafts for my apparatus for flying in the air by purely mechanical means, in which I so far succeeded, as to form shafts 24 feet long, and weighing only 3lbs., that would support my weight suspended from the middle. This was in 1824.

I also endeavoured to form a cement much stronger than glue, and indissoluble in water, for joining parts of fishing-rods, dozens of which I have made for my own use, far superior to those of the trade. White of egg and oyster-shell lime make a very good cement; but the best was a basis of shellac. This I united with another substance; and that you, as well as Mr. Joiner, may judge of its adhesive power, I will mention a fact. In 1833 I purchased a huge globular bottle, called a tarboise, for the purpose of forming it into a vase, in which to keep gold and silver fish. To suit it for this purpose, it was necessary to cut off the neck, so as to form an aperture of, at least, six inches diameter. This I accomplished in the well-known way of winding round it several turns of string soaked in spirits of turpentine, then setting the string on fire, and throwing on it a bucket of cold water when the flame is about to expire. The separation instantly takes place cleanly where the string was burning. But in this case I used too much turpentine; some drops ran down the sides and caused several vertical cracks. To remedy this error, I wound round the upper edge of the glass globe a long piece of silk riband, steeped in the compound shellac cement I above allude to. The vase remained exposed to the weather and rain during two months in my garden, but I observed that the riband firmly adhered. I took it into my head to try its state upon the glass. Upon tearing off a part that touched the glass, numerous scales of glass were brought away, and adhered to it like scales upon a fish!

I then placed a joint of a fishing-rod, joined with this cement, in a water-butt. After a week's immersion the cement was as firm as ever, without any binding over the joined part, or any varnish.

So much for marine cement—except, that I must say, that shellac will not do alone. Its tenacity is wonderful in a straight pull, but as your intelligent correspondent, Mr. Joiner, justly remarks, it is somewhat too "brittle." I have opened many a well-corked bottle of wine with a stick of sealing-wax; but if the pull be not quite vertical, the connection breaks.

It is well known that Indian rubber, when once dissolved, merely by heat, will never again solidify, but remain a clammy tar-like substance, without any power of adhesion. I endeavoured to combine caoutchouc with shellac, but did not succeed to my wish, probably from lack of manipulative skill and other means. But the composition which I have above alluded to, which pulls scales off a glass bottle, and is unaffected by the rain for many weeks, will do for all the purposes that I can think of.

For the amusement of your chemical readers, I will mention that I have made an artificial caoutchouc, which in appearance and elastic feel cannot be distinguished from the real, but it is not quite insoluble in water. It is thus: Dissolve an equal weight of glue in as much treacle, over a mild fire in an iron vessel; then add the like weight of linseed oil. This mixture will soon amalgamate, and the product will be such in appearance and elasticity, as to make anybody swear that it is caoutchouc.—COLONEL MACKENOY, in *Mechanics' Magazine.*

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